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ABSTRACT

The quality of hospital medical records, which are usually maintained by transcribing from doctors' dictation, was found to suffer because of foreign medical graduates' phonological problems and lack of familiarity with good dictation procedure. As a step in correcting this situation, eight taped discharge summaries were subjected to an analysis of the following features: (1) phonology (medical abbreviations); (2) lexicon (technical vocabulary and verbs); (3) syntax (copula, prepositions, and relative clauses); and (4) discourse (mean length of utterance, pronouns, and active/passive choice). Results of each phase of analysis are reported in narrative and briefly commented on. Appendices include a bibliography, a checklist for clarity in dictating records, a sample discharge summary, a table of general comments on features by topic, and lists of verbs and abbreviations with their frequency of use in the records that were analyzed. (JB)

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Improving English Medical Recordings by Foreign Medical Graduates

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Introduction

This presentation reports the results contained in a longer paper done this past year on medical records as a register variation of physicians' language. In the longer paper the literature was also surveyed for medical records and other doctor communication (including patient intervews) and for "simplified" registers including foreigner talk, baby talk, pidgins, and English note-taking. Comparisons of the features of medical records with those of the above-mentioned registers were made. The bibliography of the longer paper is the one provided at the end of this paper. This presentation, due to space linitations, will only discuss the results of the discourse analysis portion of the study in terms of its application to English for Special Purposes for those working with Foreign Medical Graduates (FMGs).

For those not familiar with the English problems of FMGs, I'd like to quote the Educational Commission for Foreign Medical Graduates guide developed in 1975 and 1976 for orienting FMGs to the U. S.

> One point regarding the foreign physician has been made increasingly clear by many publications and regrettably too few national meetings in the past few years - the majority of physicians new to the United States are ill-equipped to initially assume their role alongside American counterparts in residency programs or practice. They often lack necessary proficiency in English, written and spoken; many fall far short in basic medical concepts and skills; almost all are woefully unfamiliar with professional routines and interpersonal relations in the United States. The results, all too often, have been situations which are potentially dangerous for the patient and are a threat to the emotional well-being of the foreign physician and his accompanying family.(ECFGM: 1976)

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This study is part of a more general interest in doctor communication. This interest has been focussed in the past on improving communication in medical settings for foreign medical graduates whose native language is not English. However, in order to develop materials that reflect the reality and native-speaker competence (or approximations of that), one must focus also on the actual communication of native English-speaking doctors as well. Thus this study focusses on features in medical reporting by native English-speaking physicians with observations as to how the results of the features studied might applied in improving the orientation of FMGs.

Communication by Physicians

The types of communication that a doctor is involved with in medical settings include:

1. Doctor: Patient
   (a) interviewing
   (b) talk during treatment
   (c) talk during follow-up
2. Doctor:Other Medical Personnel
   (a) doctor: doctor
   (b) doctor: nurse
   (c) doctor: paramedic
   (d) doctor: medical student, intern
   (e) doctor: administrative personnel (ex. hospital head, medical records personnel, secretaries, receptionists, etc.)

The first type, doctor: patient, is principally oral communication with the exception of written prescriptions, which really are directed to a pharmacist and generally unintelligible to the patient (both because of terminology as well as handwriting). The second type, doctor:other medical personnel, can be in both oral and written form.

Impressionistically, the doctor:patient communication appears to be one register with a range of variations within it. The doctor:other medical personnel appears to be another register (as long as it concerns medical matters), again with a range of variations in it.* Thus the FMG, whose native language is other than English, faces a rather large task in developing communicative competence in English in medical situations. This task also includes learning about the cultural aspects of patient attitudes and the medical profession (including life in a hospital, legalities in medicine, etc. (The ECFMG guide mentioned earlier provides a list of communication needs of FMGs as seen by those in the medical profession.)

Even though medical records represent only a small aspect of doctor communication, they do represent recorded communication, evidence, and one starting point for someone interested in analyzing doctor communication. In my own experience I found that

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* Ferguson, 1977, p. 9.

my strongest supporters for assisting FMGs were the supervisor of medical records and the medical education office personnel. In the medical records department were tapes and transcripts evidencing problems in communication. Daily the medical transcribers had to spend sometimes 5 times as long transcribing FMG medical recordings. (These same FMGs also had communication problems with patients but there was no hard evidence of this.) Thus I feel it is important to support the medical records departments by providing them with some materials, some supportive studies, that they can take to their hospital administrators as constructive solutions to their complaints about the FMGs' English. Then once an administrator recognizes that perhaps the problems aren't insurmountable and that material is available, perhaps he/she might be more willing to consider additional work with FMGs in other aspects of communication in English. Thus this was the primary motivation of this study.

Medical Records-General

A branch of the business office of a hospital is the medical records division.

> A complete medical record must be kept on every patient. This medical record is a permanent document. It gives a complete history of all that is done for the patient during his hospital stay. It includes at least the following information: how the patient's condition was noticed and diagnosed; how the condition was treated; and how the patient responded to the treatment. Most hospitals have a staff of medical records technicians and librarians who maintain these important documents. Their work is supervised by a medical records administrator. (Bloom: 1976)

I would estimate that in almost all large hospitals in the U. S. today the principal means of recording medical reports (not including daily charts, lab reports, etc.) is by dictation. There is at least one recording center, if not more, located around the hospital. Frequently it consists of a telephone line to a recording center. (Computers are being used more and more now for storing parts of reports.) The medical transcriber then works from those tapes. Once a report is typed it is returned to the doctor for an approval signature and then sent back to the medical records department. Handwritten medical reports are also acceptable.

Many hospitals do not have a standard checklist of questions for physical examinations, for taking a patient's history, or for writing up a medical report. The checklists and formats are in the heads of the physicians. They are learned in medical school, partially by memorizing manuals that contain checklists of concerns in taking a patient's history, in doing a physical exam, and in understanding laboratory procedures and examinations. One manual I examined contained over 100 pages crammed with details. These texts, thus ultimately form the basis of medical records. These mental checklists become further refined by more training and experience.

A number of people in the medical profession have become concerned about the lack of standardization, more specifically about the lack of focus, in medical reports and about the effects this has on the quality of managing the care/treatment of a patient. A leader in a movement towards increasing standardization of and creating a problem-oriented approach towards medical reporting is Dr. Lawrence L. Weed (1969). However, due to space limitations, this will not be discussed further here.

Medical records contain both subjective and objective information about the patient's condition as well as a plan for treatment and any follow-up necessary. Subjective data is obtained from the patient and other relevant sources such as family members, friends, etc. It also includes gross observations about the patient's condition. Objective data is basically obtained from physical examination and lab records--from that which can be felt, seen and heard.

Medical Records and FMGs

Many of the problems with FMG recordings I am told (and I can verify from having listened to recordings myself) are related to poor pronunication, phonological problems. Another cause of some problems is simply a lack of familiarity with the recording equipment and of practice in dictation.* Still other problems are concerned with ambiguous manners of expressing a fact and poor or wrong lexical choice. In the hospitals where I worked complaints had been made for several years to hospital administrators but with little or no response. It was not until a crisis developed in one hospital that the administrator realized the scope of the problem. The typing backlog had become so great because of the time spent on FMGs' recordings that the tapes were contracted out for typing. The company returned 80% without transcripts, saying that they were unintelligible. You can imagine what a situation like this does for patient care, not to mention the liability of the hospital.

Improvement in FMGs' medical recordings would also carry over substantially to such areas as giving oral reports in medical conferences and writing medical papers.

*Appendix A is a checklist for making clear recordings that I developed with the assistance of several medical records personnel for FMGs, although I was told that some native English-speaking doctors could also benefit from many of the suggestions.

A STUDY OF MEDICAL RECORDS AS A REGISTER VARIATION

Data Base

Eight hospital discharge summaries from the same hospital constituted the data base of this study. This consisted of 304 utterances and 2,010 words/abbreviations. The primary final diagnoses covered the following:

1. adenopathy & obesity
2. rheumatoid arthritis
3. atypical angina
4. pulmonary embolus
5. myocardial infarction/edema
6. aneurysm (patient died)
7. lung disease/cataract
8. pneumonia/varicose veins

It was hoped that the variety of types of cases would partially compensate for the small number (8) of summaries in terms of being able to draw some preliminary conclusions about medical records.

The discharge summaries seemed to have a fairly standard format and these generally contained the following topics:

1. Present Illness (PI)
2. History of Present Illness (HPI or H)
3. Past Medical History (PMH)
4. Family History (FH)
5. Social History/Habits (SH)
6. Review of Systems (ROS)
7. Laboratory Data (LAB)
8. Physical Examination (PEX)
9. Hospital Course (HC)
10. Diagnosis (DIAG)
11. Treatment (RX)
12. Discharge Medications (DISM)
13. Disposition (DISP)
14. Condition on Discharge (COD)
15. Complications (COMP)

Not all summaries contained all 15 topics and there was some overlap of content among the topics. Appendix B is a sample discharge summary.

Of the 7 major headings for register suggested by Ferguson (1977), I found 4 to be appropriate and practical for this study: 1) Phonology, 2) Lexicon, 3)Syntax, and 4) Discourse. Prosody, Extended Uses, and Variation in Degree were not included. The specific features were chosen after reviewing the literature on "simplified" registers, including English note-taking. It should be noted that in fact some of the strategies used in English note-taking are not "simplifications."

The nature of medical recordings appeared to be characterized by factors which might also motivate simplification--time and space constraints. Given the workload of most doctors in most hospitals (and elsewhere!), the administrative duty of making reports must be, for many, one of those thasks that must be done, and the sooner it's over with the better. Also much information must be condensed into a summary which may motivate some simplification strategies. The features chosen for this then included:

1. Phonology
   a. Abbreviations
2. Lexicon
   a. Technical Vocabulary
   b. Verbs
3. Syntax
   a. Copula & Existential be
   b. Prepositions
   c. Relative Clauses
4. Discourse
   a. Mean Length of Utterance
   b. Pronouns
   c. Active/Passive Choice

Some may disagree with the classifications of the features in Syntax and Discourse. Table 1 is a summary list of the features and their use in these medical summaries.

Features

A. Phonology: Abbreviations

In the medical profession there appears to be no final authority on all medical abbreviations. Those that relate to prescriptions must be standardized for pharmaceutical use, but beyond that abbreviations seem to emerge and become "accepted" by oral and written usage. Hospitals adopt lists of abbreviations by staff vote,

and they are sometimes revised annually. Thus variations may enter depending on the specialties of the various doctors as well as the general backgrounds of the doctors. Some, of course, are more commonly used than others throughout the English-speaking medical world, and some are international if they are not tied to specific English words, such as those of Latin origin. Some of the more common ones can be found in medical dictionaries. English for Special Purposes' texts for medicine also contain glossaries of some abbreviations used in the text.

Janda, in discussing the abbreviations he found in note-taking English, suggests that "these could be considered the graphic analog of the phonological simplifications in other simplified registers." (Janda: 1977, p. 133). He goes on to divide the abbreviations between those that are conventional (commonly learned) and those for which there is no standard abbreviation. Both his data and my data contained both. Table 1 contains a list of the abbreviations used two or more times in these 8 discharge summaries. However, caution should be used in considering this list as the basis for the most commonly used and thus the most important to teach FMGs. It should be remembered that the source of the data was limited to 8 medical summaries and while the cases differed in diagnoses, the whole range of specialties is not represented. Chemical formulas were not included among the abbreviations with the exception of ETHOL (ethanol) which has become generalized to mean "alchoholic intake" or more bluntly, "drinking habits."

Of greatest interest to FMGs would be those oral abbreviations that occur on tape recordings (and not those that a transcriber or the doctor might only write). FMGs may need to learn what phrases or words can conventionally be reduced to abbreviations, and they may need to learn to pronounce them as some (perhaps many) have trouble with the names of certain letters whose names may differ or which do not appear in their languages. Special practice might be needed to say them with speed and accuracy. Some abbreviations are said as a whole word rather than the letters. As part of an orientation program for FMGs, a pre-test might be given in the form of the list of the hospital's approved abbreviations. The FMG would have to write

out the full meaning of each and the would have to pronounce them. Then practice could be done only on those that may cause problems rather than waste the FMG's valuable time practicing the whole list. (See Table 2 for a list of the abbreviations used two or more times in these medical summaries.)

B. Lexicon

B.1 Technical Vocabulary

Technical medical vocabulary is perhaps the most obvious characteristic of doctor's language. Andersen (1977) notes that it is used by children role-playing doctors even though they may or may not know the actual meanings of all words. As Shuy (1974) points out it is a major factor in communication problems between doctors and patients.

What seems to be characteristic of medical recordings and possibly other technical registers is a simplification or omission of some syntactic strategies resulting in the use of single lexical items, i.e. bilaterally for on both sides. Also topics with more objective data sources impressionistically seem to have the highest concentration of technical jargon.

FMGs probably come to the U. S. with at least a reading knowledge of the technical jargon. Thus, for the purpose of improving recordings their main concern with regards to lexicon will be pronunciation so that they can be understood by their colleagues and so the medical transcribers can understand the tapes. It is for doctor:patient communication that the FMG must learn the layman's terms (at least comprehension of them).

One additional way to assist FMGs in technical vocabulary is to request from the pharmacist a list of the pharmaceuticals most common to a specific FMG's specialty, but do not ask for a list of all pharmaceuticals as computers are needed in many hospitals to inventory them.

B.2 Verbs

Verbs were counted in this study primarily for the purpose of providing some appropriate lexical items for those developing materials for FMGs. In such materials emphasis might be placed on those verbs commonly occurring in medical records that have irregular forms (see Table 3). Consideration might also be given to verbs that have specialized use in medical language (such as present) as well as technical verbs such as ambulate, blanch, dilate, disorient, elevate, endoscope and radiate. If doctor: patient communication is also a concern then appropriate synonyms could be taught for such verbs. Table 4 is a frequency list of the verbs that occurred in this data.

C. Syntax

C.1 Copula/Existential "be"

The relative use versus omission of the copula and existential be was studied. Only the highlights of this analysis will be given here. In the primarily technical and objective data topics there was an especially high number of incomplete sentences whose "recovered" verb would have been the copula or the existential be. About 80% would have been the copula; 20%, the existential. The verb have is the one with the highest frequency of use in the above-mentioned verb list. (The copula, existential, and the passive auxiliary be were not included in that list.) Perhaps, not coincidentally have was also the verb with the highest count of omissinns after the copula.

A high frequency of omission of a specific feature implies a high recoverability rate (assumed by the speaker) among "speakers" of a register. In the omission of words in many registers, it is the functor words that ususally go first because of their low informational load. Thus it might be nuggested that the most frequently occurring verbs in more complex structures may have the lowest informational load and be the most likely to be ommitted also. The copula omission data coincides with this "simplifying" strategy occurring in a number of other registers.

FMGs will, no doubt, be glad to learn that these verbs may frequently be left out in technical medical reporting, especially since these verbs (copula/existential be and have) are irregular verbs and since some languages do not have a copula verb.

Although articles were not studied specifically here, there appears to be a very high omission rate of these also which should please FMGs as the appropriate use of definite and indefinite articles is very difficult usually to learn in English.

C.2 Prepositions

The omission of prepositions, suggested by some as a characteristic of "simplified" registers did not seem to apply to this data as omission occurred in only 6 of the 304 utterances (1.9%).

C.3 Relative Clause

Since medical records are addressed to assumed competent speakers/listeners of the medical register, and as time and effort are important variables, it was expected that subordination probably would not be avoided if it were an efficient strategy, time and effort-wise. This would contrast with an apparent tendency to avoid subordination in the previously mentioned registers; English note-taking was the only exception--it contained subordination.

Only explicit relative clauses and four types of reduced relative clauses were considered. Only 8 explicit relative clauses were found in the medical records data. All were relativizations on the subject of the relative clause which,according to Keenan/Comrie's Accessbility Hierarchy of nouns in relative clauses, is the easiest to relativize on (Keenan/Comrie: 1977). Three reduced relative clauses were found.

Given such a relatively small number (11 out of 304 utterances, or 3% contained relative clauses) it is hard to draw any specific conclusion except to paraphrase Janda: that since relative clauses do occur,simplification is not always operating with medical records. However, it should also be pointed out that the very large number of incomplete utterances (195) may be a potential source of some relative clauses if they were expanded. Pit Corder's suggestion that complication rules arise only as the situation demands them might explain the large number of incomplete sentences that might have surfaced in a more complex form if a wider audience (with less shared medical background) had been involved. After all, if

time and effort are motivating factors and recoverability is easily achieved, then a simple topic-comment utterance (with verb or other elements missing) is more efficient than saying the full sentence. Thus, relative clauses need not be high on the list of structures to work on with FMGs, but neither should they be ignored.

D. Discourse

D.1 Mean Length of Utterance

The discharge summaries were too short to contain the minimum 100 utterances necessary for establishing a strictly interpreted MLU, and the range of lengths was too great to consider the MLU across all summaries (or even across one). However, the vairation in the MLU across topics did prove to be interesting in terms of objective/subjective data sources; The primarily objective data topics (Discharge Medications, Physical Examination, Review of Systems, Treatment, and Laboratory Data) all fell within the middle range of 7.6-10.0 MLU. Diagnosis, was the only exception. The more subjective data topics of History of Present Illness, Hospital Course, Present Illness, and Disposition had high MLUs ranging from 10.75 - 14.24. The relaively low MLU for Family History and Social History, subjective data topics, may be indicative of possibly less apparent emphasis on these topics in the medical records and possibly in the interview. Weed (1969) and Cicourel (1974) note and lament the lack of emphasis by many doctors in these areas.

The results of this analysis seem to have little implication, if any, for FMGs.

D.2 Pronouns and the Lexical Referent-The Patient

In the beginning of a medical summary a patient is identified in two ways: 1) by case number and name, followed by the spelling of the name; and 2) by the first comment on the patient, giving sex, age and race, for example: "This is the first GH admission for this 34 year-old white, female..." Thereafter references to the patient are made primarily by the NP "the patient" with some use of personal pronouns; however, in about 20 cases the subject referent was deleted. Also

possessive pronouns were "objectified" with the use of articles, for example, "the lungs" or "a tender left calf." The distribution of personal pronouns seems to reflect the degree to which the content is highly technical with personal pronoun use being primarily reserved for the more subjective data.

Janda (1977) in discussing note-taking observes a tendency for some omissions of possessive pronouns as part of a simplification strategy based on recoverability. While the "objectified" body parts can only belong to the patient concerned with in the medical summary, the frequent omission of personal pronouns (subject and possessive) seems to have a different motivation as a more non-personal replacement is used. The motivation seems to be to make the text sound more objective, more scientific.

My own personal reaction as a teacher might be <u>not</u> to encourage "objectifying" patients. I liked hearing a Persian FMG say " A 6 pound baby boy was born" instead of what I heard a native English-speaking doctor say:" A 6 pound 2 ounce male infant was delivered." However, if my purpose is to assist FMGs in speaking and writing technical medical English, and if objectifying is more appropriate, that is, more acceptable in medical circles, then that is what should be emphasized.

D.3 <u>Doubt</u>

The frequency is questions is very much task related. Doctor-patient communication in an interview setting has a high number of questions, primarily from the doctor to the patient. However, in medical reporting questions are not asked. Facts and impressions are reported. Thus observations about the form of questions could not be studied in this register. Closely related to questions, however, are other expressions of doubt instatement form. I felt it might be useful to determine how doubt is expressed in a situation in which doubt is generally attempted to be resolved and not tolerated as much as might be in situations where matters are not so "life and death" oriented.

<u>Expressions of uncertainty</u>
a. <u>Syntax</u>
   1. <u>If-then constructions</u>
   2. <u>Neg + Adj</u>: "...final diagnosis not certain."
b. <u>Lexical Items</u>: <u>probable</u>, <u>possible</u>, <u>possibly</u>

c. Discourse: Stating of contrasting situation, before and after:
"Final pathology sections of the lymph node were initially read as Hodgkins' Disease but it was then decided that there was no definite evidence of malignancy and the final reading was chronic adenitis."

Attributive phrases were used for some subjective data. Statements of fact that could not be documented by hospital records or by direct examination by the doctor were couched in attributive phrases such as "...patient denied..." "patient stated..." "...tells of..." and "it was felt that..."

We must remember that doctors are human and have doubts, too.

D.4 Active/Passive Choice

When first listening to medical records one frequently has the impression of a relatively high incidence of passive sentences. The passive seems to be used as a strategy in medical reporting to avoid personal object pronouns, to avoid having the patient as the direct object in general. However, once the data was analyzed there was a surprisingly low number of passives - only 7.6% of the total utterances (23 out of 304) were passive. The construction that on first impression might give the appearance of a passive is the copula + past participle (rather than the auxiliary be in the passive), for example, "He is well nourished."

Perhaps the most striking feature I observed about passives (besides their low frequency) was their relatively frequent use in one topic: Hospital Course. But it is not so surprising when one considers all the "doing to a patient" that takes place in a hospital!

Thus for FMGs one might concentrate on passive constructions in limited situations, that of patient treatment, hospital course. Time might also be spent on the copula + Adj with some stress on irregular past participles.

In looking at the Active voice, the most frequent use was in Present Illness and History of Present Illness, the most subjective data topics. Also rather frequent use occurs in Hospital Course and in Physical Examination. Active utterances represented 28.2% of the total utterances (86 out of 304). As may be remembered a majority of the utterances were incomplete (64% or 195 out of 304).

Closing

For those of you interested in working with FMGs I hope this has given you some data for possibly developing materials or for how to go about determining the appropriate language that needs to be emphasized for specific communicative needs. Also for those interested in doctor-patient communication, perhaps this will serve as a basis of comparison. Perhaps this might also provide some of you with data and ideas to gain support from medical records supervisors and ultimately from hospital administrators in developing English for Special Purposes programs.

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*These texts contain some practice in medical reporting for FMGS.

APPENDIX A

CHECKLIST FOR CLARITY OF RECORDING CASE HISTORIES AND NOTES IN HOSPITALS BY FOREIGN DOCTORS

It should be remembered that accurate medical records of a patient are critical for current and future care of that patient and for the legal protection of the hospital and doctor. Not all problems in recording and transcribing cases are due to a poor or an inadequate oral command of English by foreign doctors. Some problems come from a lack of experience in using recording equipment, a lack of familiarity with the particular machines in use, and a failure to use certain techniques for clarity while recording. (Doctors who are native speakers of English fail in these areas, too, sometimes.) If the foreign doctor can be checked off on the points below, his/her recordings should improve significantly even though there may still be a need for ESL training to further improve the comprehensibility of the recordings.

1. The department head to whom the doctor is assigned should inform the doctor of the types of notes and records he requires (amount of detail, length, minimum facts, etc.).

2. The doctor should be shown the medical records office and be made to understand that real people have to listen to and transcribe his/her recordings. Perhaps the new resident could be given the assignment of transcribing 2 minutes of another doctor's recording just to sensitize the doctor to what someone will have to do with his/her recordings.

3. The doctor should be shown, in detail the mechanics of operating <u>all</u> types of recording machines in the hospital (and not just shown a machine and told to push this or that button in a quick demonstration for a group).

4. The doctor should become failiar with the following techniques for recording cases clearly:

   a. Give numbers in the case number clearly and slowly.

   b. Do not run words together.

   c. Say when a sentence is complete by using the word "period."

   d. Say when a new paragraph, new topic, or new procedure is starting by saying "new paragraph."

   e. Say "correction" if a mistake is made, then give the corrected wording.

   f. If not sure of the pronunciation of a word, say the word then follow it with the spelling of the word.

   g. Speak loudly and clearly; remember that someone has to listen to you on a tape recorder. (Sometimes FMGs are self-conscious about speaking loudly when a native speaker of English or another doctor is nearby.)

(The above ideas are based on a number of discussions with personnel in the medical records departments of two hospitals and have been printed in "ESL in Medicine: A Matter of Life and Death," by Margaret van Naerssen, in the <u>TESOL Quarterly</u>, Vol. 12 No. 2, June 1978.)

APPENDIX B

DISCHARGE SUMMARY

PRESENT ILLNESS: This is the second RHA for this 34 year old woman initially admitted on 3/31 for a three week history of fever and lymphadenopathy. Low grade fever continued while in the hospital. A lymph node biopsy on 4/8 was read as probable non-Hodgkins lymphoma on frozen section. The patient signed out AMA to be home on Easter and to return for further diagnostic workup and decision regarding therapy.

PAST MEDICAL HISTORY: Positive for obesity, two C-sections, abnormal GGG with normal fasting glucose, and PPD conversion during the past six months. Medications included Bactrin for UTI diagnosed on initial admission.

REVIEW OF SYSTEMS: Positive for headaches, occasional backache and one evening of mild LLQ pain the week PTA.

PHYSICAL EXAM: Showed an obese young woman in no acute distress, afebrile, with pulse 96 and regular, respir. of 20. HEENT exam showed mildly tender right cervical fullness and a healing right supraclavicular node biopsy site. Lungs were clear. Heart show I/VI systolic ejection murmur. Breasts were benign. Abdomen was obese and there was no palpable organomegaly. Pelvic and rectal had been normal on 4/1 with two negative stool guaiacs. Extremities and neuro were WNL.

LAB DATA: Included a normal CBC and profile. Clear chest x-ray on 3/31, EKG WNL. Urinanalysis showed 2-3 white cells and 1-2 red cells. VDRL, heterophile, toxic titre, stools for O&P were all recently negative.

HOSPITAL COURSE: Bone marrow biopsy and aspirate were done. Aspirate was normal and preliminary report of biopsy was of slight hypercellularity with mild erythroid hypoplasia. Final pathology sections of the lymph node were initially read as Hodgkins' Disease but it was then decided that there was no definite evidence of malignancy and the final reading was chronic adenitis. A second biopsy was deemed necessary and was scheduled for Monday, April 18. The patient was discharged on 4/14 for re-admission to the Surgical Service on 4/17 for lymph node biopsy.

DISCH. DIAG.: 1. Adenopathy, possibly lymphoma, final diagnosis not certain.
2. Recent PPD conversion. 3. Obesity.

DISCH. MEDS: Isoniazide 300 mg daily, Bacterim double strength, 1 tablet twice daily.

DISPOSITION: To be readmitted on 4/17/77 for repeat lymph node biopsy, OPD followup in Dr. G.M.'s GMJ Clinic.

Table 1

Table 6 : General Comments on Features by Topic

Topic / Register Feature	P I	HPI	PMH	FH	SH	ROS	LAB	PEX	HC	DIAG	RX	DISM	DISP	COD	CONP
Phono. Abbrev.	M-H	M-H	M	L	L-M	L-M	H	H	M	L-M	L	M	L-M	---	---
Lexicon															
Techn.Vocab.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.
Verbs	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na.	na..	na.
Syntax															
Cop/Exist.be	---	L	M	L	L-M	M	H	H	L-M	H	L	H	L	L	L
Prepos.	---	---	1	2	1	---	1	---	---	1	---	1	---	---	---
Rel.Clause	---	2	4	---	---	---	---	---	5	---	---	---	---	---	---
Discourse															
MLU	H	H	M	L	L	M	M	M-H	H	L	M	M-H	H	L	L
Pers. Pro.	M	M	L	L	---	---	---	---	M	---	L	L	---	---	---
Act/Pas/Inc Choice	A	A	A_I	A_I	I	I	I	A_I	P_A	I	I_A	I_P	I_A	I	I
Doubt	---	---	---	---	---	---	1	---	1	4	---	---	1	---	---

Use: H=high M=moderate L=low
--- = none occurred
na. = not analyzed in a way that will fit this chart

From: van Naerssen, Margaret. " Medical Records as a Register Variation of Physicians' Language." Los Angeles, California: University of Southern California, Linugistics Department, unpublished manuscript, Spring 1978.

Table 2

Abbreviations Used Two or More Times in Medical Records

X (12)
mg (11)
PTA (11)
L (9)
RH (9)
BILAT (7)
EMG (7)
R (7)
PO (6) also p.o.
WBC (6)
GMU (5)
NEG (5)
p.r.n. (5)
SOB (5)
WNL (5)
HP (4)
q.d. (4)
y. (4)
abd. (3)
CXR (3)
HBP (3)
Neuro (3)
NL (3)
PPDC (3)
SS (2)
TVP (3)
UA (3)
AU (2)
AUL (2)
b.i.d. (2)
BUN (2)
CBC(2)
CPK (2)
CULT (2)
EOM (2)
ER (2)

Table 3

Irregular Verbs in Medical Records

bleed	know
blow	lose
come, become	make
do	read
eat	see
feel	sleep
give	swell
go, undergo	take
have	tell

Table 4

Verb Frequency List in Medical Records

(be is not counted here)

have (24)	born (1)
show (7)	climb (1)
admit (5)	complete (1)
decrease (5)	decide (1)
deny (5)	deem (1)
develop (5)	demonstrate (1)
dilate (5)	describe (1)
discharge (5)	diagnose (1)
radiate (5)	disappear (1)
treat (5)	discontinue (1)
continue (4)	disorient (1)
improve (4)	do (1)
include (4)	donate (1)
increase (4)	eat (1)
note (4)	elevate (1)
return (4)	endoscope (1)
smoke (4)	establish (1)
work (4)	give (1)
come (3)	go (1)
die (3)	heal (1)
follow (3)	know (1)
place (3)	last (1)
present (3)	lose (1)
remain (3)	marry (1)
swell (3)	miss (1)
become (2)	occur (1)
feel (2)	progress (1)
live (2)	pronounce (1)
make (2)	raise (1)
read (2)	receive (1)
recommend (2)	refuse (1)
reveal (2)	relieve (1)
see (2)	repair (1)
start (2)	require (1)
use (2)	schedule (1)
vomit (2)	shift (1)
walk (2)	sign out (1)
abate (1)	sleep (1)
ambulate (1)	state (1)
appear (1)	suffocate (1)
blanch (1)	take (1)
bleed (1)	tell (1)
blow (1)	travel (1)
blur (1)	undergo (1)